

## Fertility care: Blood tests and investigations

Fertility care has become more complex. As a result, this guidance has been developed to provide fertility nurses, especially those new to fertility care, with an overview of the various blood tests and investigations offered. It is important to note that this document is not exhaustive, and there may be additional tests used for diagnostic purposes in fertility that are not included.

Fertility care is continually advancing, and consequently, the evidence supporting certain investigations, such as reproductive immunology and pre-implantation genetic testing are inconclusive and have not been included.

The Human Fertilisation and Embryology Authority (HFEA), which regulates fertility care across the UK, has evaluated some tests offered (also known as treatment add-ons) regarding their effectiveness in enhancing patient outcomes, and have rated them according to the current available evidence. Read more by [visiting the Human Fertilisation and Embryology Authority \(HFEA\) website](#).

Further information on assessment for [fertility care can be found on the NHS website](#) and [HFEA website on preparing for IVF](#).

Name	Type of test	Purpose of test	Reference ranges	Notes
<b>Hormones</b>				
Progesterone (PROG)	Blood test	Can help to show if low progesterone levels are causing infertility or problems maintaining a pregnancy.	Follicular 0.2-2.8 nmol/L Periovulatory 0.4-38.1nmol/L Luteal 5.8-75.9 nmol/L Postmenopausal 0.2-0.4nmol/L D21 progesterone: >30nmol/L usually indicates ovulation; <5nmol/L indicates no ovulation has occurred	
Luteinizing hormone (LH)	Blood test	This test is performed to determine whether ovulation has occurred during the cycle.	Follicular phase 1-12 iu/L Ovulatory phase 16-104 iu/L Luteal phase 1-12 iu/L	

			Post-menopausal 16-66 iu/L	
Follicle stimulating Hormone (FSH)	Blood test	Can give an indication of the health of your ovaries and can indicate some reproductive health conditions like premature ovarian insufficiency (POI) and menopause.	Follicular phase 1-9 IU/L Ovulatory phase 6-26 IU/L Luteal phase 1-9 IU/L Post-menopausal 30-118 IU/L	
Oestradiol (E2)	Blood test	Can give an indication of how well the ovaries and menstrual cycle are working. When your ovaries stop working, your levels of E2 drop significantly, which is why it can also signpost menopause and POI.	Follicular phase 114-132 pmol/L Ovulatory phase 222-1959 pmol/L Luteal phase 222 -854 pmol/L Post-menopausal <18.4-505 pmol/L	
Prolactin (PRL)	Blood test	Testing prolactin can indicate if ovulation is occurring naturally. It can also help us interpret why FSH or LH levels might be out of range, as well as symptoms such as irregular or absent periods.	Female: 59 – 619IU/mL Male: 45 – 375 IU/mL	Can be used in male and female investigations.
Anti Mullerian Hormone (AMH)	Blood test	Testing AMH levels can give a good indication of egg quantity at a given point in time. It can also help signal some reproductive health conditions like polycystic ovaries.	Age 20-24 (8.7-83.6 pmol/L) Age 25-29 (6.4-70.3 pmol/L) Age 30-34 (4.1-58 pmol/L) Age 35-39 (1.1-53.5 pmol/L) Age 40-44 (0.2-39.1 pmol/L) Age 45-50 (0.1-19.3 pmol/L)	
Testosterone	Blood test	It can help diagnose conditions that may be affecting fertility.	Male: 10 – 30 nmol/L Female: 0.7 – 2.8 nmol/L	
Sex Hormone-binding Globulin (SHBG)	Blood test	Can help to regulate testosterone and oestrogen levels, monitoring it helps to interpret those hormone results, particularly if they are abnormal.	Female 9-145 nmol/L Male 15-64 nmol/L	Can also be used in male diagnostics.

Dehydroepiandrosterone Sulphate (DHEAS)	Blood test	It can help investigate the causes of symptoms such as excess facial and body hair (hirsutism), acne, hair loss, irregular periods, and fertility problems.	35.0–430.0 µg/dL	
Quantitative BHCG	Blood test	It indicates whether there is a pregnancy.	<p>Values of &lt;5.8 indicate a Negative pregnancy test</p> <p>Values of ≥5.8 indicate a Positive pregnancy test</p> <p>Weeks post LMP U/L:-</p> <p>3: 5.8 - 71.2</p> <p>4: 9.5 - 750</p> <p>5: 217 - 7138</p> <p>6: 158 - 31795</p> <p>7: 3697 - 163563</p> <p>8: 32065 - 149571</p> <p>9: 63803 - 151410</p> <p>10: 46509 - 186977</p> <p>12: 27832 - 210612</p> <p>14: 13950 - 62530</p> <p>15: 12039 - 70971</p> <p>16: 9040 - 56451</p> <p>17: 8175 - 55868</p> <p>18: 8099 - 58176</p>	<p>Serial BHCG can reassure and show viability of pregnancy or miscarriage.</p> <p><b>Note:</b> Upper reference interval for post-menopausal women is &lt; 8.3 IU/L</p>
<b>Infection</b>				
Rubella IgG	Blood test	To check for immunity prior to pregnancy.	Immune Non-Immune	
Rubella IgM	Blood test	To check for current infection	Not detected Intermediate Detected	

HTLV I/II	Blood test	To check for viral infection	Negative Positive	This test may yield an inconclusive result, which may require retesting or additional tests to clarify the status''
Syphilis screen	Blood test	To check for viral infection	Negative Positive	
Chlamydia screen	Urine test	To check for infection	Negative Positive	
HIV 1 & 2	Blood test	To check for viral infection	Negative Intermediate Positive	
Hepatitis B core antibody	Blood test	To check for viral infection	Negative Positive	
Hepatitis B surface antigen	Blood test	To check for viral infection	Negative Positive Intermediate	
Hepatitis C antibody	Blood test	To check for viral infection	Negative Positive	
Cytomegalovirus (CMV IgG & IgM)	Blood test	To check for current or previous infection	Negative Positive	Important in cases where donor sperm is used.
<b>Other blood tests</b>				
Full blood count	Blood test	To check overall health		Haemoglobin and platelet count important for theatre procedures.
Thalassemia screen	Blood test	To ascertain if patient/couple are carriers		

Sickle cell screen	Blood test	To ascertain if patient/couple are carriers	AS – Trait AA- Non carrier SS- Carrier	
Thyroid stimulating hormone (TSH)	Blood test	This test can help to screen for an overactive or underactive thyroid, which can impact overall health including your weight, fatigue levels, mood, periods and ovulation.	0.27 – 4.2 mU/l (less than 2.5mU/L for fertility patients)	
Thyroxine (T4)	Blood test	Monitoring T4 levels helps to screen for an overactive or underactive thyroid, which can impact overall health including your weight, fatigue levels, mood, periods, and ovulation.	8.0 – 18.0 pmol/L	
<b>Ultrasound Scans and X-Rays</b>				
Transvaginal scan	Ultrasound Scan	To diagnose conditions affecting reproductive organs and monitor pregnancy.		
Early pregnancy scan	Ultrasound Scan	To check gestation/viability of pregnancy		
Ultrasound 3d scan	Ultrasound Scan	To evaluate uterine cavity, the endometrium and assess volume and vascularity pattern.		
Saline Hysterosonogram	Ultrasound Scan	To achieve a clearer ultrasound picture of the inside contour of the uterine cavity.		

Hystero Contrast Sonography (HyCoSy)	Ultrasound Scan with Contrast	To investigate the cavity of the uterus and the fallopian tubes		
HSG (Hysterosalpingography)	Xray with Contrast	To outline the internal shape of the uterus and identify if fallopian tubes are blocked.		

The following tests are frequently conducted together to provide a more comprehensive clinical overview.

Hormone profile – LH, FSH, E2

Hormone Profile – LH, FSH, E2, AMH

Monitoring profile in cycle – E2, LH, progesterone

Male profile – LH, FSH, testosterone, SHBG, prolactin

Thyroid profile- TSH, T4,

Virology screen – HIV 1&2, Hepatitis B Core Antibody, Hepatitis B surface antigen, Hepatitis C antibody

Name	Type of Test	Purpose of Test	Reference ranges	Notes
<b>Male Specific tests</b>				
Semen analysis	Semen sample Lab test	To provide an accurate picture of a male's fertility potential		
Sperm DNA Fragmentation	Semen sample Lab test	To assess the Quality of the DNA within sperm.		
<b>Male Blood tests</b>				
Luteinizing hormone (LH)	Blood tests	To identify any hormonal imbalances	1.0–8.0 IU/L, (Normal)	To evaluate the function of the testicles and

				testosterone production.
Follicle stimulating Hormone (FSH)	Blood test	To identify any hormonal imbalances	1.0 and 7.6 MIU/ml. (Normal)	
Testosterone	Blood test	To identify any hormonal imbalances	>300 ng/dL	
Sex Hormone-binding Globulin (SHBG)	Blood test	Can help to regulate testosterone and oestrogen levels, monitoring it helps to interpret those hormone results, particularly if they are abnormal	15-64 nmol/L (Normal)	
Prolactin	Blood test	To identify any hormonal imbalances.	< 25 mcg/L (normal) 25-30 mcg/L (mildly elevated) >30 mcg/L (elevated)	

Further information on these tests can be found at:

**American Society of Reproductive Medicine (ASRM) (2020)** [Testing and interpreting measures of ovarian reserve: a committee opinion](#) (PDF)

**Farinde et al (2024)** [Laboratory Reference ranges in Healthy Adults](#)

**Human Fertilisation and Embryology Authority (HFEA) (2023)** [Treatment Add Ons with limited evidence](#)

**National Institute for Health and Care Excellence (NICE) (2017)** [Fertility problems: assessment and treatment- Clinical guideline \(CG156\)](#)

**O'Neill et al (2022)** [Redefining Laboratory references ranges for female reproductive and thyroid hormones](#), Fertility and Sterility,118:4 (E213)

**Sikaris et al (2005)** [Reproductive Hormones reference intervals for healthy fertile young men: Evaluation of Automated Platform assays](#), Journal of Clinical Endocrinology & Metabolism' 90:11(5928-5936)

**The Doctors Laboratory (TDL) (2024) [Laboratory's Guide 2024](#) (PDF)**

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